SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: Chang, Lung-Ji

(ii) TITLE OF INVENTION: Combination Immunogene Therapy

(iii) NUMBER OF SEQUENCES: 25

(iv) CORRESPONDENCE ADDRESS:
(A) ADDRESSEE: Medlen & Carroll, LLP
(B) STREET: 220 Montgomery Street, Suite 2200
(C) CITY: San Francisco
(D) STATE: California
(E) COUNTRY: United States of America
(F) ZIP: 94104

(v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30

(vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: US
(B) FILING DATE:
(C) CLASSIFICATION:

(viii) ATTORNEY/AGENT INFORMATION:
(A) NAME: Ingolia, Diane E.
(B) REGISTRATION NUMBER: 40,027
(C) REFERENCE/DOCKET NUMBER: CHANG-02687

(ix) TELECOMMUNICATION INFORMATION:
(A) TELEPHONE: (415) 705-8410
(B) TELEFAX: (415) 397-8338

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6145 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GAATTCATAC CAGATCACCG AAAACTGTCC TCCAAATGTG TCCCCCTCAC ACTCCCAAAT 60

TCGCGGGCTT CTGCCTCTTA GACCACTCTA CCCTATTCCC CACACTCACC GGAGCCAAAG 120

CCGCGGCCCT TCCGTTTCTT TGCTTTTGAA AGACCCCACC CGTAGGTGGC AAGCTAGCTT 180

AAGTAACGCC ACTTTGCAAG GCATGGAAAA ATACATAACT GAGAATAGAA AAGTTCAGAT 240

CAAGGTCAGG AACAAAGAAA CAGCTGAATA CCAAACAGGA TATCTGTGGT AAGCGGTTCC 300

TGCCCCGGCT CAGGGCCAAG AACAGATGAG ACAGCTGAGT GATGGGCCAA ACAGGATATC 360

TGTGGTAAGC AGTTCCTGCC CCGGCTCGGG GCCAAGAACA GATGGTCCCC AGATGCGGTC 420

CAGCCCTCAG CAGTTTCTAG TGAATCATCA GATGTTTCCA GGGTGCCCCA AGGACCTGAA 480

AATGACCCTG TACCTTATTT GAACTAACCA ATCAGTTCGC TTCTCGCTTC TGTTCGCGCG 540

CTTCCGCTCT CCGAGCTCAA TAAAAGAGCC CACAACCCCT CACTCGGCGC GCCAGTCTTC 600

CGATAGACTG CGTCGCCCGG GTACCCGTAT TCCCAATAAA GCCTCTTGCT GTTTGCATCC 660

GAATCGTGGT CTCGCTGTTC CTTGGGAGGG TCTCCTCTGA GTGATTGACT ACCCACGACG 720

GGGGTCTTTC ATTTGGGGGC TCGTCCGGGA TTTGGAGACC CCTGCCCAGG GACCACCGAC 780

CCACCACCGG GAGGTAAGCT GGCCAGCAAC TTATCTGTGT CTGTCCGATT GTCTAGTGTC 840

TATGTTTGAT GTTATGCGCC TGCGTCTGTA CTAGTTAGCT AACTAGCTCT GTATCTGGCG 900

GACCCGTGGT GGAACTGACG AGTTCTGAAC ACCCGGCCGC AACCCTGGGA GACGTCCCAG 960

GGACTTTGGG GGCCGTTTTT GTGGCCCGAC CTGAGGAAGG GAGTCGATGT GGAATCCGAC 1020

CCCGTCAGGA TATGTGGTTC TGGTAGGAGA CGAGAACCTA AAACAGTTCC CGCCTCCGTC 1080

TGAATTTTTG CTTTCGGTTT GGAACCGAAG CCGCGCGTCT TGTCTGCTGC AGCGCTGCAG 1140

CATCGTTCTG TGTTGTCTCT GTCTGACTGT GTTTCTGTAT TTGTCTGAAA ATTAGGGCCA 1200

GACTGTTACC ACTCCCTTAA GTTTGACCTT AGGTCACTGG AAAGATGTCG AGCGGATCGC 1260

TCACAACCAG TCGGTAGATG TCAAGAAGAG ACGTTGGGTT ACCTTCTGCT CTGCAGAATG 1320

GCCAACCTTT AACGTCGGAT GGCCGCGAGA CGGCACCTTT AACCGAGACC TCATCACCCA 1380

GGTTAAGATC AAGGTCTTTT CACCTGGCCC GCATGGACAC CCAGACCAGG TCCCCTACAT 1440

CGTGACCTGG GAAGCCTTGG CTTTTGACCC CCCTCCCTGG GTCAAGCCCT TTGTACACCC 1500

TAAGCCTCCG CCTCCTCTTC CTCCATCCGC CCCGTCTCTC CCCCTTGAAC CTCCTCGTTC 1560

GACCCCGCCT CGATCCTCCC TTTATCCAGC CCTCACTCCT TCTCTAGGCG CCGGAATTCC 1620

GATCTGATCA AGAGACAGGA TGAGGATCGT TTCGCATGAT TGAACAAGAT GGATTGCACG 1680

CAGGTTCTCC GGCCGCTTGG GTGGAGAGGC TATTCGGCTA TGACTGGGCA CAACAGACAA 1740

TCGGCTGCTC TGATGCCGCC GTGTTCCGGC TGTCAGCGCA GGGGCGCCCG GTTCTTTTTG 1800

TCAAGACCGA CCTGTCCGGT GCCCTGAATG AACTGCAGGA CGAGGCAGCG CGGCTATCGT 1860

GGCTGGCCAC GACGGGCGTT CCTTGCGCAG CTGTGCTCGA CGTTGTCACT GAAGCGGGAA 1920

GGGACTGGCT GCTATTGGGC GAAGTGCCGG GGCAGGATCT CCTGTCATCT CACCTTGCTC 1980

CTGCCGAGAA AGTATCCATC ATGGCTGATG CAATGCGGCG GCTGCATACG CTTGATCCGG 2040

CTACCTGCCC ATTCGACCAC CAAGCGAAAC ATCGCATCGA GCGAGCACGT ACTCGGATGG 2100

AAGCCGGTCT TGTCGATCAG GATGATCTGG ACGAAGAGCA TCAGGGGCTC GCGCCAGCCG 2160

AACTGTTCGC CAGGCTCAAG GCGCGCATGC CCGACGGCGA GGATCTCGTC GTGACCCATG 2220

GCGATGCCTG CTTGCCGAAT ATCATGGTGG AAAATGGCCG CTTTTCTGGA TTCATCGACT 2280

GTGGCCGGCT GGGTGTGGCG GACCGCTATC AGGACATAGC GTTGGCTACC CGTGATATTG 2340

CTGAAGAGCT TGGCGGCGAA TGGGCTGACC GCTTCCTCGT GCTTTACGGT ATCGCCGCTC 2400

CCGATTCGCA GCGCATCGCC TTCTATCGCC TTCTTGACGA GTTCTTCTGA GCGGGACTCT 2460

GGGGTTCGAA ATGACCGACC AAGCGACGCC CAACCTGCCA TCACGAGATT TCGATTCCAC 2520

CGCCGCCTTC TATGAAAGGT TGGGCTTCGG AATCGTTTTC CGGGACGCCG GCTGGATGAT 2580

CCTCCAGCGC GGGGATCTCA TGCTGGAGTT CTTCGCCCAC CCCGGGCTCG ATCCCCTCGC 2640

GAGTTGGTTC AGCTGCTGCC TGAGGCTGGA CGACCTCGCG GAGTTCTACC GGCAGTGCAA 2700

ATCCGTCGGC ATCCAGGAAA CCAGCAGCGG CTATCCGCGC ATCCATGCCC CCGAACTGCA 2760

GGAGTGGGGA GGCACGATGG CCGCTTTGGT CGACCCGGAC GGGACGCTCC TGCGCCTGAT 2820

ACAGAACGAA TTGCTTGCAG GCATCTCATG AGTGTGTCTT CCCGTTTTCC GCCTGAGGTC 2880

ACTGCGTGGA TGGAGCGCTG GCGCCTGCTG CGCGACGGCG AGCTGCTCAC CACCCACTCG 2940

AGGGCGTGCA GCGCTGCAGA GGCCGAGTGC AGAACTGCTC CAAAGGGACC TCAAGGCTTT 3000

CCGAGGGACA CTAGGCTGAC TCCATCGAGC CAGTGTAGAG ATAAGCTTAT CGATTAGTCC 3060

AATTTGTTAA AGACAGGATA TCAGTGGTCC AGGCTCTAGT TTTGACTCAA CAATATCACC 3120

AGCTGAAGCC TATAGAGTAC GAGCCATAGA TAAAATAAAA GATTTTATTT AGTCTCCAGA 3180

AAAAGGGGGG AATGAAAGAC CCCACCTGTA GGTTTGGCAA GCTAGCTTAA GTAACGCCAT 3240

TTTGCAAGGC ATGGAAAAAT ACATAACTGA GAATAGAGAA GTTCAGATCA AGGTCAGGAA 3300

CAGATGGAAC AGCTGAATAT GGGCCAAACA GGATATCTGT GGTAAGCAGT TCCTGCCCCG 3360

GCTCAGGGCC AAGAACAGAT GGAACAGCTG AATATGGGCC AAACAGGATA TCTGTGGTAA 3420

GCAGTTCCTG CCCCGGCTCA GGGCCAAGAA CAGATGGTCC CCAGATGCGG TCCAGCCCTC 3480

AGCAGTTTCT AGAGAACCAT CAGATGTTTC CAGGGTGCCC CAAGGACCTG AAATGACCCT 3540

GTGCCTTATT TGAACTAACC AATCAGTTCG CTTCTCGCTT CTGTTCGCGC GCTTCTGCTC 3600

CCCGAGCTCA ATAAAAGAGC CCACAACCCC TCACTCGGGG CGCCAGTCCT CCGATTGACT 3660

GAGTCGCCCG GGTACCCGTG TATCCAATAA ACCCTCTTGC AGTTGCATCC GACTTGTGGT 3720

CTCGCTGTTC CTTGGGAGGG TCTCCTCTGA GTGATTGACT ACCCGTCAGC GGGGGTCTTT 3780

CATTTGGGGG CTCGTCCGGG ATCGGGAGAC CCCTGCCCAG GGACCACCGA CCCACCACCG 3840

GGAGGTAAGC TGGCTGCCTC GCGCGTTTCG GTGATGACGG TGAAAACCTC TGACACATGC 3900

AGCTCCCGGA GACGGTCACA GCTTGTCTGT AAGCGGATGC CGGGAGCAGA CAAGCCCGTC 3960

AGGGCGCGTC AGCGGGTGTT GGCGGGTGTC GGGGCGCAGC CATGACCCAG TCACGTAGCG 4020

ATAGCGGAGT GTATACTGGC TTAACTATGC GGCATCAGAG CAGATTGTAC TGAGAGTGCA 4080

CCATATGCGG TGTGAAATAC CGCACAGATG CGTAAGGAGA AAATACCGCA TCAGGCGCTC 4140

TTCCGCTTCC TCGCTCACTG ACTCGCTGCG CTCGGTCGTT CGGCTGCGGC GAGCGGTATC 4200

AGCTCACTCA AAGGCGGTAA TACGGTTATC CACAGAATCA GGGGATAACG CAGGAAAGAA 4260

CATGTGAGCA AAAGGCCAGC AAAAGGCCAG GAACCGTAAA AAGGCCGCGT TGCTGGCGTT 4320

TTTCCATAGG CTCCGCCCCC CTGACGAGCA TCACAAAAAT CGACGCTCAA GTCAGAGGTG 4380

GCGAAACCCG ACAGGACTAT AAAGATACCA GGCGTTTCCC CCTGGAAGCT CCCTCGTGCG 4440

CTCTCCTGTT CCGACCCTGC CGCTTACCGG ATACCTGTCC GCCTTTCTCC CTTCGGGAAG 4500

CGTGGCGCTT TCTCATAGCT CACGCTGTAG GTATCTCAGT TCGGTGTAGG TCGTTCGCTC 4560

CAAGCTGGGC TGTGTGCACG AACCCCCCGT TCAGCCCGAC CGCTGCGCCT TATCCGGTAA 4620

CTATCGTCTT GAGTCCAACC CGGTAAGACA CGACTTATCG CCACTGGCAG CAGCCACTGG 4680

TAACAGGATT AGCAGAGCGA GGTATGTAGG CGGTGCTACA GAGTTCTTGA AGTGGTGGCC 4740

TAACTACGGC TACACTAGAA GGACAGTATT TGGTATCTGC GCTCTGCTGA AGCCAGTTAC 4800

CTTCGGAAAA AGAGTTGGTA GCTCTTGATC CGGCAAACAA ACCACCGCTG GTAGCGGTGG 4860

TTTTTTTGTT TGCAAGCAGC AGATTACGCG CAGAAAAAAA GGATCTCAAG AAGATCCTTT 4920

GATCTTTTCT ACGGGGTCTG ACGCTCAGTG GAACGAAAAC TCACGTTAAG GGATTTTGGT 4980

CATGAGATTA TCAAAAAGGA TCTTCACCTA GATCCTTTTA AATTAAAAAT GAAGTTTTAA 5040

ATCAATCTAA AGTATATATG AGTAAACTTG GTCTGACAGT TACCAATGCT TAATCAGTGA 5100

GGCACCTATC TCAGCGATCT GTCTATTTCG TTCATCCATA GTTGCCTGAC TCCCCGTCGT 5160

GTAGATAACT ACGATACGGG AGGGCTTACC ATCTGGCCCC AGTGCTGCAA TGATACCGCG 5220

AGACCCACGC TCACCGGCTC CAGATTTATC AGCAATAAAC CAGCCAGCCG GAAGGGCCGA 5280

GCGCAGAAGT GGTCCTGCAA CTTTATCCGC CTCCATCCAG TCTATTAATT GTTGCCGGGA 5340

AGCTAGAGTA AGTAGTTCGC CAGTTAATAG TTTGCGCAAC GTTGTTGCCA TTGCTGCAGG 5400

CATCGTGGTG TCACGCTCGT CGTTTGGTAT GGCTTCATTC AGCTCCGGTT CCCAACGATC 5460

AAGGCGAGTT ACATGATCCC CCATGTTGTG CAAAAAAGCG GTTAGCTCCT TCGGTCCTCC 5520

GATCGTTGTC AGAAGTAAGT TGGCCGCAGT GTTATCACTC ATGGTTATGG CAGCACTGCA 5580

TAATTCTCTT ACTGTCATGC CATCCGTAAG ATGCTTTTCT GTGACTGGTG AGTACTCAAC 5640

CAAGTCATTC TGAGAATAGT GTATGCGGCG ACCGAGTTGC TCTTGCCCGG CGTCAACACG 5700

GGATAATACC GCGCCACATA GCAGAACTTT AAAAGTGCTC ATCATTGGAA AACGTTCTTC 5760

GGGGCGAAAA CTCTCAAGGA TCTTACCGCT GTTGAGATCC AGTTCGATGT AACCCACTCG 5820

TGCACCCAAC TGATCTTCAG CATCTTTTAC TTTCACCAGC GTTTCTGGGT GAGCAAAAAC 5880

AGGAAGGCAA AATGCCGCAA AAAAGGGAAT AAGGGCGACA CGGAAATGTT GAATACTCAT 5940

ACTCTTCCTT TTTCAATATT ATTGAAGCAT TTATCAGGGT TATTGTCTCA TGAGCGGATA 6000

CATATTTGAA TGTATTTAGA AAAATAAACA AATAGGGGTT CCGCGCACAT TTCCCCGAAA 6060

AGTGCCACCT GACGTCTAAG AAACCATTAT TATCATGACA TTAACCTATA AAAATAGGCG 6120

TATCACGAGG CCCTTTCGTC TTCAA 6145

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 67 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GATCTAAGCT TGCGGCCGCA GATCTCGAGC CATGGATCCT AGGCCTGATC ACGCGTCGAC 60

TCGCGAT 67

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 65 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

CGATCGCGAG TCGACGCGTG ATCAGGCCTA GGATCCATGG CTCGAGATCT GCGGCCGCAA 60

GCTTA 65

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 33 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid

(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

AAGCTTGATC ACCACCATGA TTGAACAAGA TGG 33

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 34 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

CCGGATCCGT CGACCCCAGA GTCCCGCTCA GAAG 34

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 35 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

CCCGGGAAGC TTCCACCATG TGGCTGCAGA GCCTG 35

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 29 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

AATGGATCCT ATCACTCCTG GACTGGCTC 29

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 435 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

ATGTGGCTGC AGAGCCTGCT GCTCTTGGGC ACTGTGGCCT GCAGCATCTC TGCACCCGCC 60

CGCTCGCCCA GCCCCAGCAC GCAGCCCTGG GAGCATGTGA ATGCCATCCA GGAGGCCCGG 120

CGTCTCCTGA ACCTGAGTAG AGACACTGCT GCTGAGATGA ATGAAACAGT AGAAGTCATC 180

TCAGAAATGT TTGACCTCCA GGAGCCGACC TGCCTACAGA CCCGCCTGGA GCTGTACAAG 240

CAGGGCCTGC GGGGCAGCCT CACCAAGCTC AAGGGCCCCT TGACCATGAT GGCCAGCCAC 300

TACAAGCAGC ACTGCCCTCC AACCCCGGAA ACTTCCTGTG CAACCCAGAT TATCACCTTT 360

GAAAGTTTCA AAGAGAACCT GAAGGACTTT CTGCTTGTCA TCCCCTTTGA CTGCTGGGAG 420

CCAGTCCAGG AGTGA 435

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 30 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

TGTGGATCCA CCATGGGACT GAGTAACATT 30

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 35 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

TTTGGATCCT TAAAAACATG TATCACTTTT GTCGC 35

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 972 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

ATGGGACTGA GTAACATTCT CTTTGTGATG GCCTTCCTGC TCTCTGGTGC TGCTCCTCTG 60

AAGATTCAAG CTTATTTCAA TGAGACTGCA GACCTGCCAT GCCAATTTGC AAACTCTCAA 120

AACCAAAGCC TGAGTGAGCT AGTAGTATTT TGGCAGGACC AGGAAAACTT GGTTCTGAAT 180

GAGGTATACT TAGGCAAAGA GAAATTTGAC AGTGTTCATT CCAAGTATAT GGGCCGCACA 240

AGTTTTGATT CGGACAGTTG GACCCTGAGA CTTCACAATC TTCAGATCAA GGACAAGGGC 300

TTGTATCAAT GTATCATCCA TCACAAAAAG CCCACAGGAA TGATTCGCAT CCACCAGATG 360

AATTCTGAAC TGTCAGTGCT TGCTAACTTC AGTCAACCTG AAATAGTACC AATTTCTAAT 420

ATAACAGAAA ATGTGTACAT AAATTTGACC TGCTCATCTA TACACGGTTA CCCAGAACCT 480

AAGAAGATGA GTGTTTTGCT AAGAACCAAG AATTCAACTA TCGAGTATGA TGGTATTATG 540

CAGAAATCTC AAGATAATGT CACAGAACTG TACGACGTTT CCATCAGCTT GTCTGTTTCA 600

TTCCCTGATG TTACGAGCAA TATGACCATC TTCTGTATTC TGGAAACTGA CAAGACGCGG 660

CTTTTATCTT CACCTTTCTC TATAGAGCTT GAGGACCCTC AGCCTCCCCC AGACCACATT 720

CCTTGGATTA CAGCTGTACT TCCAACAGTT ATTATATGTG TGATGGTTTT CTGTCTAATT 780

CTATGGAAAT GGAAGAAGAA GAAGCGGCCT CGCAACTCTT ATAAATGTGG AACCAACACA 840

ATGGAGAGGG AAGAGAGTGA ACAGACCAAG AAAAGAGAAA AAATCCATAT ACCTGAAAGA 900

TCTGATGAAG CCCAGCGTGT TTTTAAAAGT TCGAAGACAT CTTCATGCGA CAAAAGTGAT 960

ACATGTTTTT AA 972

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 29 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

AAAAGCTTGG ATCCACCATG AGTAAAGGA 29

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 30 base pairs
(B) TYPE: nucleic acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

AATCTAGATT ACTATTTGTA TAGTTCATCC 30

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 1451 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

AAGCTTTGGA GCTAAGCCAG CAATGGTAGA GGGAAGATTC TGCACGTCCC TTCCAGGCGG 60

CCTCCCCGTC ACCACCCCCC CCAACCCGCC CCGACCGGAG CTGAGAGTAA TTCATACAAA 120

AGGACTCGCC CCTGCCTTGG GGAATCCCAG GGACCGTCGT TAAACTCCCA CTAACGTAGA 180

ACCCAGAGAT CGCTGCGTTC CCGCCCCCTC ACCCGCCCGC TCTCGTCATC ACTGAGGTGG 240

AGAAGAGCCA TGCGTGAGGC TCCGGTGCCC GTCAGTGGGC AGAGCGCACA TCGCCCACAG 300

TCCCCGAGAA GTTGGGGGGA GGGGTCGGCA ATTGAACCGG TGCCTAGAGA AGGTGGCGCG 360

GGGTAAACTG GGAAAGTGAT GTCGTGTACT GGCTCCGCCT TTTTCCCGAG GGTGGGGGAG 420

AACCCGTATA TAAGTGCAGT AGTCGCCGTG AACGTTCTTT TTCGCAACGG GTTTGCCGCC 480

AGAACACAGG TAAGTGCCGT GTGTGGTTCC CGCGGGCCTG GCCTCTTTAC GGGTTATGGC 540

CCTTGCGTGC CTTGAATTAC TTCCACGCCC CTGGCTGCAG TACGTGATTC TTGATCCCGA 600

GCTTCGGGTT GGAAGTGGGT GGGAGAGTTC GAGGCCTTGC GCTTAAGGAG CCCCTTCGCC 660

TCGTGCTTGA GTTGAGGCCT GGCCTGGGCG CTGGGGCCCC CGCGTGCGAA TCTGGTGGCA 720

CCTTCGCGCC TGTCTCGCTG CTTTCGATAA GTCTCTAGCC ATTTAAAATT TTTGATGACC 780

TGCTGCGACG CTTTTTTTCT GGCAAGATAG TCTTGTAAAT GCGGGCCAAG ATCTGCACAC 840

TGGTATTTCG GTTTTTGGGG CCGCGGGCGG CGACGGGGCC CGTGCGTCCC AGCGCACATG 900

TTCGGCGAGG CGGGGCCTGC GAGCGCGGCC ACCGAGAATC GGACGGGGGT AGTCTCAAGC 960

TGGCCGGCCT GCTCTGGTGC CTGGCCTCGC GCCGCCGTGT ATCGCCCCGC CCTGGGCGGC 1020

AAGGCTGGCC CGGTCGGCAC CAGTTGCGTG AGCGGAAAGA TGGCCGCTTC CCGGCCCTGC 1080

TGCAGGGAGC TCAAAATGGA GGACGCGGCG CTCGGGAGAG CGGGCGGGTG AGTCACCCAC 1140

ACAAAGGAAA AGGGCCTTTC CGTCCTCAGC CGTCGCTTCA TGTGACTCCA CGGAGTACCG 1200

GGCGCCGTCC AGGCACCTCG ATTAGTTCTC GAGCTTTTGG AGTACGTCGT CTTTAGGTTG 1260

GGGGGAGGGG TTTTATGCGA TGGAGTTTCC CCACACTGAG TGGGTGGAGA CTGAAGTTAG 1320

GCCAGCTTGG CACTTGATGT AATTCTCCTT GGAATTTGCC CTTTTTGAGT TTGGATCTTG 1380

GTTCATTCTC AAGCCTCAGA CAGTGGTTCA AAGTTTTTTT CTTCCATTTC AGGTGTCGTG 1440

AAAACTCTAG A 1451

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

AAGCTTTGGA GCTAAGCCAG CAAT 24

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

TCTAGAGTTT TCACGACACC TGA 23

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 28 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

TCTAGAGCGG CCGCGGAGGC CGAATTCG 28

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 36 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

GATCCGAATT CGGCCTCCGC GGCCGCTCTA GATGCA 36

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 40 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

GAAGATCTGC GGCCGCCACC ATGTGGCCCC CTGGGTCAGC 40

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 29 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

CCTCTCGAGT TAGGAAGCAT TCAGATAGC 29

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 762 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

ATGTGGCCCC CTGGGTCAGC CTCCCAGCCA CCGCCCTCAC CTGCCGCGGC CACAGGTCTG 60

CATCCAGCGG CTCGCCCTGT GTCCCTGCAG TGCCGGCTCA GCATGTGTCC AGCGCGCAGC 120

CTCCTCCTTG TCGCTACCCT GGTCCTCCTG GACCACCTCA GTTTGGCCAG AAACCTCCCC 180

GTGGCCACTC CAGACCCAGG AATGTTCCCA TGCCTTCACC ACTCCCAAAA CCTGCTGAGG 240

GCCGTCAGCA ACATGCTCCA GAAGGCCAGA CAAACTCTAG AATTTTACCC TTGCACTTCT 300

GAAGAGATTG ATCATGAAGA TATCACAAAA GATAAAACCA GCACAGTGGA GGCCTGTTTA 360

CCATTGGAAT TAACCAAGAA TGAGAGTTGC CTAAATTCCA GAGAGACCTC TTTCATAACT 420

AATGGGAGTT GCCTGGCCTC CAGAAAGACC TCTTTTATGA TGGCCCTGTG CCTTAGTAGT 480

ATTTATGAAG ACTTGAAGAT GTACCAGGTG GAGTTCAAGA CCATGAATGC AAAGCTTCTG 540

ATGGATCCTA AGAGGCAGAT CTTTCTAGAT CAAAACATGC TGGCAGTTAT TGATGAGCTG 600

ATGCAGGCCC TGAATTTCAA CAGTGAGACT GTGCCACAAA AATCCTCCCT TGAAGAACCG 660

GATTTTTATA AAACTAAAAT CAAGCTCTGC ATACTTCTTC ATGCTTTCAG AATTCGGGCA 720

GTGACTATTG ATAGAGTGAT GAGCTATCTG AATGCTTCCT AA 762

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 34 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

AAAGAGCTCC ACCATGTGTC ACCAGCAGTT GGTC 34

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 28 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

AAGGATCCTA ACTGCAGGGC ACAGATGC 28

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 987 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

ATGTGTCACC AGCAGTTGGT CATCTCTTGG TTTTCCCTGG TTTTTCTGGC ATCTCCCCTC 60

GTGGCCATAT GGGAACTGAA GAAAGATGTT TATGTCGTAG AATTGGATTG GTATCCGGAT 120

GCCCCTGGAG AAATGGTGGT CCTCACCTGT GACACCCCTG AAGAAGATGG TATCACCTGG 180

ACCTTGGACC AGAGCAGTGA GGTCTTAGGC TCTGGCAAAA CCCTGACCAT CCAAGTCAAA 240

GAGTTTGGAG ATGCTGGCCA GTACACCTGT CACAAAGGAG GCGAGGTTCT AAGCCATTCG 300

CTCCTGCTGC TTCACAAAAA GGAAGATGGA ATTTGGTCCA CTGATATTTT AAAGGACCAG 360

AAAGAACCCA AAAATAAGAC CTTTCTAAGA TGCGAGGCCA AGAATTATTC TGGACGTTTC 420

ACCTGCTGGT GGCTGACGAC AATCAGTACT GATTTGACAT TCAGTGTCAA AAGCAGCAGA 480

GGCTCTTCTG ACCCCCAAGG GGTGACGTGC GGAGCTGCTA CACTCTCTGC AGAGAGAGTC 540

AGAGGGGACA ACAAGGAGTA TGAGTACTCA GTGGAGTGCC AGGAGGACAG TGCCTGCCCA 600

GCTGCTGAGG AGAGTCTGCC CATTGAGGTC ATGGTGGATG CCGTTCACAA GCTCAAGTAT 660

GAAAACTACA CCAGCAGCTT CTTCATCAGG GACATCATCA AACCTGACCC ACCCAACAAC 720

TTGCAGCTGA AGCCATTAAA GAATTCTCGG CAGGTGGAGG TCAGCTGGGA GTACCCTGAC 780

ACCTGGAGTA CTCCACATTC CTACTTCTCC CTGACATTCT GCGTTCAGGT CCAGGGCAAG 840

AGCAAGAGAG AAAAGAAAGA TAGAGTCTTC ACCGACAAGA CCTCAGCCAC GGTCATCTGC 900

CGCAAAAATG CCAGCATTAG CGTGCGGGCC CAGGACCGCT ACTATAGCTC ATCTTGGAGC 960

GAATGGGCAT CTGTGCCCTG CAGTTAG 987

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 2097 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid
(A) DESCRIPTION: /desc = "DNA"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

ATGAGGCTCG CCGTGGGAGC CCTGCTGGTC TGCGCCGTCC TGGGGCTGTG TCTGGCTGTC 60

CCTGATAAAA CTGTGAGATG GTGTGCAGTG TCGGAGCATG AGGCCACTAA GTGCCAGAGT 120

TTCCGCGACC ATATGAAAAG CGTCATTCCA TCCGATGGTC CCAGTGTTGC TTGTGTGAAG 180

AAAGCCTCCT ACCTTGATTG CATCAGGGCC ATTGCGGCAA ACGAAGCGGA TGCTGTGACA 240

CTGGATGCAG GTTTGGTGTA TGATGCTTAC TTGGCTCCCA ATAACCTGAA GCCTGTGGTG 300

GCAGAGTTCT ATGGGTCAAA AGAGGATCCA CAGACTTTCT ATTATGCTGT TGCTGTGGTG 360

AAGAAGGATA GTGGCTTCCA GATGAACCAG CTTCGAGGCA AGAAGTCCTG CCACACGGGT 420

CTAGGCAGGT CCGCTGGGTG GAACATCCCC ATAGGCTTAC TTTACTGTGA CTTACCTGAG 480

CCACGTAAAC CTCTTGAGAA AGCAGTGGCC AATTTCTTCT CGGGCAGCTG TGCCCCTTGT 540

GCGGATGGGA CGGACTTCCC CCAGCTGTGT CAACTGTGTC CAGGGTGTGG CTGCTCCACC 600

CTTAACCAAT ACTTCGGCTA CTCGGGAGCC TTCAAGTGTC TGAAGGATGG TGCTGGGGAT 660

GTGGCCTTTG TCAAGCACTC GACTATATTT GAGAACTTGG CAAACAAGGC TGACAGGGAC 720

CAGTATGAGC TGCTTTGCCT AGACAACACC CGGAAGCCGG TAGATGAATA CAAGGACTGC 780

CACTTGGCCC AGGTCCCTTC TCATACCGTC GTGGCCCGAA GTATGGGCGG CAAGGAGGAC 840

TTGATCTGGG AGCTTCTCAA CCAGGCCCAG GAACATTTTG GCAAAGACAA ATCAAAAGAA 900

TTCCAACTAT TCAGCTCTCC TCATGGGAAG GACCTGCTGT TTAAGGACTC TGCCCACGGG 960

TTTTTAAAAG TCCCCCCAAG GATGGATGCC AAGATGTACC TGGGCTATGA GTATGTCACT 1020

GCCATCCGGA ATCTACGGGA AGGCACATGC CCAGAAGCCC CAACAGATGA ATGCAAGCCT 1080

GTGAAGTGGT GTGCGCTGAG CCACCACGAG AGGCTCAAGT GTGATGAGTG GAGTGTTAAC 1140

AGTGTAGGGA AAATAGAGTG TGTATCAGCA GAGACCACCG AAGACTGCAT CGCCAAGATC 1200

ATGAATGGAG AAGCTGATGC CATGAGCTTG GATGGAGGGT TTGTCTACAT AGCGGGCAAG 1260

TGTGGTCTGG TGCCTGTCTT GGCAGAAAAC TACAATAAGA GCGATAATTG TGAGGATACA 1320

CCAGAGGCAG GGTATTTTGC TGTAGCAGTG GTGAAGAAAT CAGCTTCTGA CCTCACCTGG 1380

GACAATCTGA AAGGCAAGAA GTCCTGCCAT ACGGCAGTTG GCAGAACCGC TGGCTGGAAC 1440

ATCCCCATGG GCCTGCTCTA CAATAAGATC AACCACTGCA GATTTGATGA ATTTTTCAGT 1500

GAAGGTTGTG CCCCTGGGTC TAAGAAAGAC TCCAGTCTCT GTAAGCTGTG TATGGGCTCA 1560

GGCCTAAACC TGTGTGAACC CAACAACAAA GAGGGATACT ACGGCTACAC AGGCGCTTTC 1620

AGGTGTCTGG TTGAGAAGGG AGATGTGGCC TTTGTGAAAC ACCAGACTGT CCCACAGAAC 1680

ACTGGGGGAA AAAACCCTGA TCCATGGGCT AAGAATCTGA ATGAAAAAGA CTATGAGTTG 1740

CTGTGCCTTG ATGGTACCAG GAAACCTGTG GAGGAGTATG CGAACTGCCA CCTGGCCAGA 1800

GCCCCGAATC ACGCTGTGGT CACACGGAAA GATAAGGAAG CTTGCGTCCA CAAGATATTA 1860

CGTCAACAGC AGCACCTATT TGGAAGCAAC GTAACTGACT GCTCGGGCAA CTTTTGTTTG 1920

TTCCGGTCGG AAACCAAGGA CCTTCTGTTC AGAGATGACA CAGTATGTTT GGCCAAACTT 1980

CATGACAGAA ACACATATGA AAAATACTTA GGAGAAGAAT ATGTCAAGGC TGTTGGTAAC 2040

CTGAGAAAAT GCTCCACCTC ATCACTCCTG GAAGCCTGCA CTTTCCGTAG ACCTTAA 2097